

Claims:

1. An apparatus for separating impurities from a liquid by a non-dispersive contacting of a liquid-liquid reactive systems, said liquids being immiscible with each other, which comprises a cylindrical column separated into a first stage and a second stage, a plurality of modules of packed metallic fibers mounted in the first stage of said column on a support, a first distributor provided in the first stage of the column for distributing a first liquid located above said support such that said first liquid completely wets said fibers by capillary action and forms a film thereon, a second distributor fitted at a bottom portion of the second stage for distributing a second liquid containing impurities on to the metallic fibers, wherein said second liquid flow co-currently with said first liquid so that the impurities present in said second liquid react with said first liquid and dissolve therein and a separator connected to a bottom of said column for separating the first liquid and purified second liquid.
2. An apparatus as claimed in claim 1, wherein the first distributor separates the cylindrical column into a first stage and a second stage in addition to distributing the first liquid.
3. An apparatus as claimed in claim 1, wherein packed metallic fibers comprises of fine wires packed in a single or multiple tubes in order to enable mass transfer and / or mass transfer with chemical reaction to take place.
4. An apparatus as claimed in claim 1, wherein said modules comprise of a plurality of tubes held inside a metallic shell, said shell being supported either on said separator or independently outside said separator.
5. An apparatus as claimed in claim 1, wherein the modules are supported in said column at their upper ends.
6. An apparatus as claimed in claim 1, wherein the modules are suspended from tie rods mounted in said first stage of said column and the metallic fibers are supported and looped around said tie rods.
7. An apparatus as claimed in claim 1, wherein the metallic wires are packed in the form of sinusoidal wave so that inter fiber void space is uniformly maintained.

8. An apparatus as claimed in claim 1, wherein the metallic fibers are chemically treated to enhance wettability.
9. An apparatus as claimed in claim 1, wherein the metallic fibers are made of materials selected from stainless steel, phosphorous bronze, glass fibers and plastic materials.
10. An apparatus as claimed in claim 1, wherein the metallic fibers are of the thickness of from 0.1 mm to 0.3 mm.
11. An apparatus as claimed in claim 1, wherein the modules of metallic fibers comprise of multiple tubes with a cap on top in each tube said cap being provided with an orifice designed for specific flow range.
12. An apparatus as claimed in claim 1, wherein the first distributor is provided with a plurality of holes whose diameter is equal to or greater than the diameter of the packed metallic fibers.
13. An apparatus as claimed in claim 1, wherein the second distributor is provided with plurality of holes whose diameter is equal to or greater than the diameter of the packed metallic fibers and plurality of holes of smaller diameter which are placed adjacent to the holes whose diameter is equal to or greater than the diameter of the packed metallic fibers.
14. An apparatus as claimed in claim 1, wherein the separator provided at the bottom of the column is optionally provided with heating coils.
15. A process for separating impurities from a liquid by a non-dispersive contacting of liquid-liquid reactive systems which comprises distributing a first liquid over a support consisting of packed metallic fibers mounted in the first stage of a two stage liquid distributor so that the entire support is completely wetted by said first liquid by capillary action, said first liquid forming a film over said support, distributing separately, a second liquid containing impurities to be removed, said second liquid being immiscible with said first liquid and flowing co-currently to said first liquid so that the dissolved impurities in said second liquid react with the film forming first liquid and dissolve therein, allowing the two liquids to flow downward to a separator and collecting the pure second liquid and if desired, recycling said first liquid.

16. A process as claimed in claim 15, wherein the first liquid is selected from a caustic solution or amine solution or both and said second solution is a hydrocarbon stream.
17. A process as claimed in claim 16, wherein the hydrocarbon stream is selected from LPG, gasoline, naphtha, kerosene and diesel.
18. A process as claimed in claim 15, wherein the impurities present in the second liquid are naphthenic acid, hydrogen sulfide, mercaptans and COS.